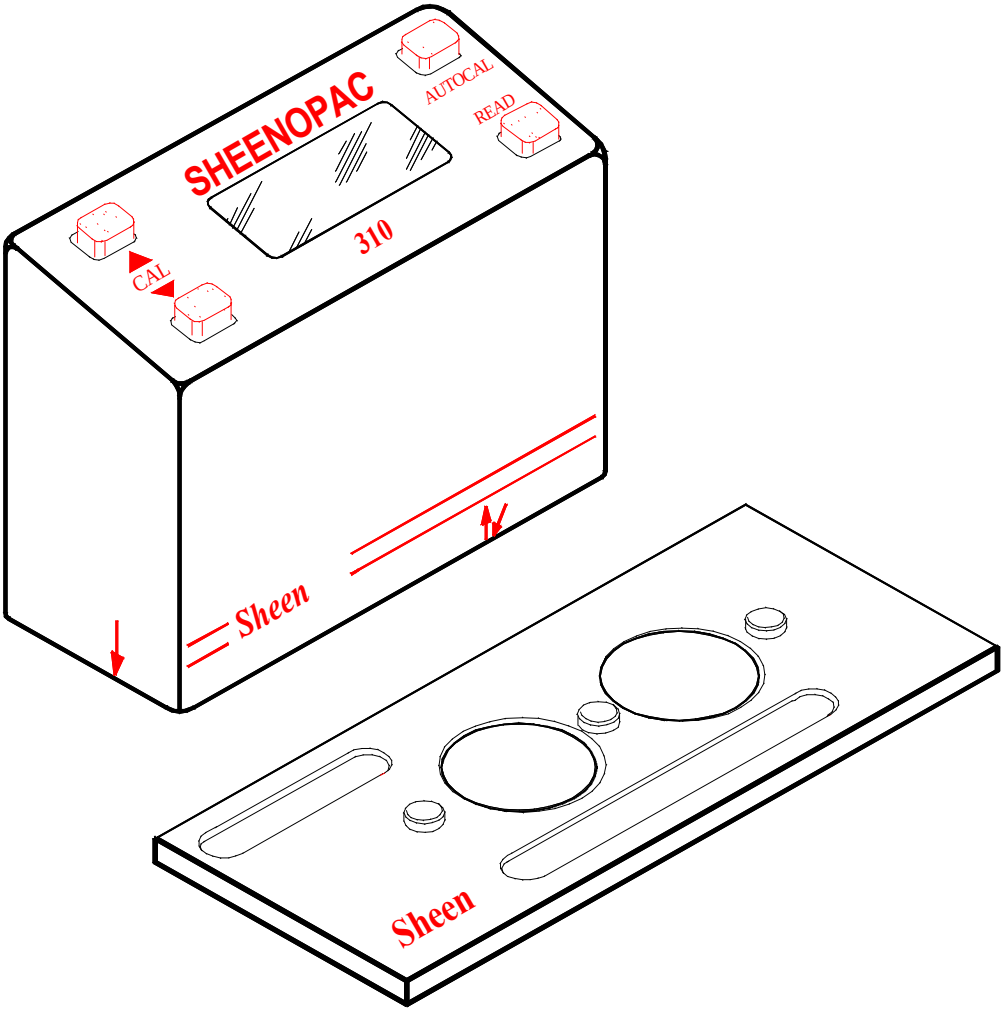
310 SHEEN-OPAC

REFLECTOMETER

OPERATION MANUAL



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1. INTRODUCTION

1.1 Introduction

The Sheen Opac 310 Reflectometer is a hand held instrument for measuring luminous reflectance of plane surfaces. The optical arrangement has been designed using a geometry of 45°/0° to conform to ISO 6504, ASTM E97 and DIN 55984 specifications.

The 310 can be Automatically calibrated on the supplied tile or manually to any tile. This allows ease of use while allowing the operator to calibrate as close to the value of the surface under investigation.

The measuring range of the instrument is 0 - 100 units, 100 being the value of the perfect reflecting diffuser. Typical applications are for the measurement of hiding power of coatings and inks, and perform basic shade sorting for materials such as plastics, ceramics and anodised aluminium. The 310 is designed to be used only on flat surfaces.

Mullti-function LC display indicating gloss units with additional indication for low battery warning.

Extended battery life is maintained by automatic power shut down after approximately 5 seconds of releasing the read button.

Measurement time of approximately 1 second with an off to on cycle time of 5 seconds.

The instrument is powered by a rechargeable battery pack fitted internally and is supplied with a mains powered recharger. this allows the instrument to be charged overnight ready for the next day.

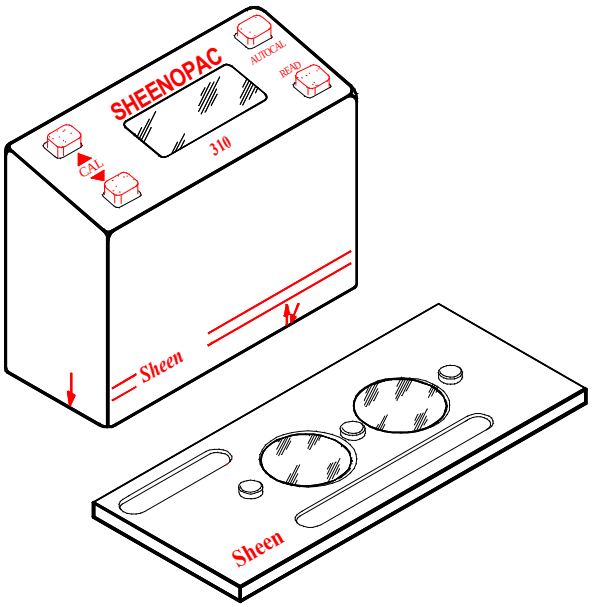
A reference tile and battery charger are supplied within the lightweight carrying case for the 310 aiding the protection and portability of the instrument.

1.2 Control Functions

The instruments functions are controlled by four push button switches located on the Control and Display Panel. Two switches either side of the LC Display (Fig 1.)

1.	A1	Read.	3.	A3	Raise value.
2	A2	Autocal.	4.	A4	Lower value.

Fig 1.



2. SPECIFICATION

PHYSICAL DIMENSIONS	47mmD x 93mmH x 117mmW
WEIGHT	0.8 Kg
CHARGER VOLTAGE	20 Volts DC at 0.66 Amps.
BATTERY VOLTAGE	7.2 Volts DC.
BATTERY LIFE @ MODE	Continuous Batch Mode
BATTERY LIFE @ MODE	Intermittent *
CHARGED SHELF LIFE	3 Months (Storage)
OPERATION AUTO SHUT DOWN	7 Hours *
CONTINUOUS	3 Hours
DISPLAY TYPE	Back Lit LC Display
DISPLAY FUNCTIONS	Low Battery, Gloss Units, Calibration Value,
ACCURACY	1 Gloss Unit
WORKING ENVIRONMENT	+ 15 to + 35 Degrees C
AMBIENT HUMIDITY	80% RH Non Condensing
REPEATABILITY	± 1 Gloss Unit
EMC COMPLIANCE	
OTHER STANDARDS	ISO 6504, DIN 55984, AND ASTM E97.

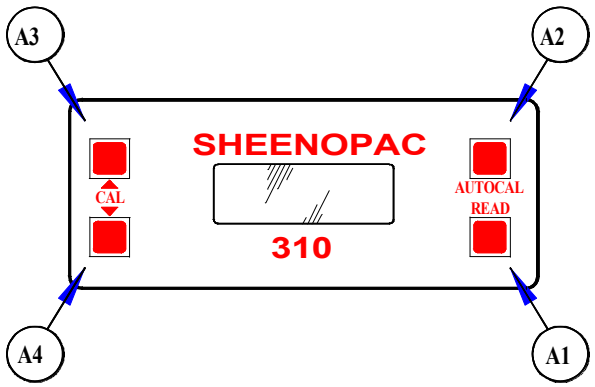
3. OPERATION

3.1 SWITCHING ON

Press the Read button (A1) (**Fig 1**.) and hold for 2 seconds to enable the instrument to take a measurement. The 310 automatically switches off approximately 5 seconds after the Read button has been released. The reading is retained on the display until the Auto shut down is complete. In this way the Instrument cannot remain powered unintentionally and therefore helps to conserve battery life between recharges.

Fig 1.

CONTROL & DISPLAY



3.2 AUTOCAL

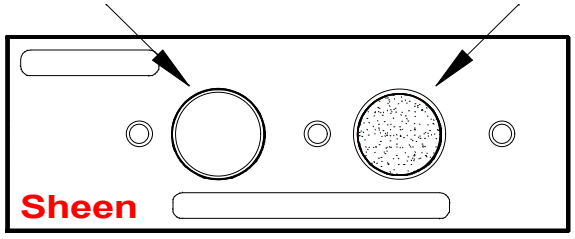
It is recommended that before the instrument is used that it is placed onto the supplied calibration tile and the automatic calibration function be carried out. This will ensure that the instrument is set to the stated standard reading on the gloss tile prior to any testing of product. To carry out this function proceed as follows:

Place the instrument onto the location studs on the gloss tile holder (**Fig 2**.) **'White standard'** after ensuring that the tile is clean, press the Read button (A1) and then the autocal button (A2) hold both buttons for at least 3 seconds to allow the instrument to settle. The instrument will Autocal to the Gloss Units at 60° as stated on the calibration label affixed to the tile holder. Release the Autocal button (A2) first, and then the Read button (A1).

Fig 2.

GLOSS TILE

WHITE 'STANDARD' GREY 'CHECK'



3.3 TAKING A READING

Place the base of the instrument on the surface to be tested. Align the Red arrows on the case (**Fig 4**) over the area of interest. The base of the instrument must be in good contact with the surface to be tested, press the Read button (A1) and hold for 3 seconds so that the displayed reading may settle, the reading on the LCD is shown in Gloss Units.

4. CALIBRATION

4.1 Procedure (Automatic Calibration)

There is no need to adjust the zero of this instrument. To reset the calibration value place the instrument on the supplied calibration tile **(Fig 3**) making sure the base is flat and located onto the left hand and centre studs. Press the Read button (A1) and then the Autocal button (A2). The instrument will Automatically calibrate to the 'White Standard' tile value as stated on the tile label. This function takes approximately 2 seconds to complete. Release the Autocal button (A2) first and then the Read button (A1). Allow the instrument to Auto shut down. Press the Read button (A1) for a second time to verify that the value displayed will be that of the tile label in Gloss Units **(fig 3).**

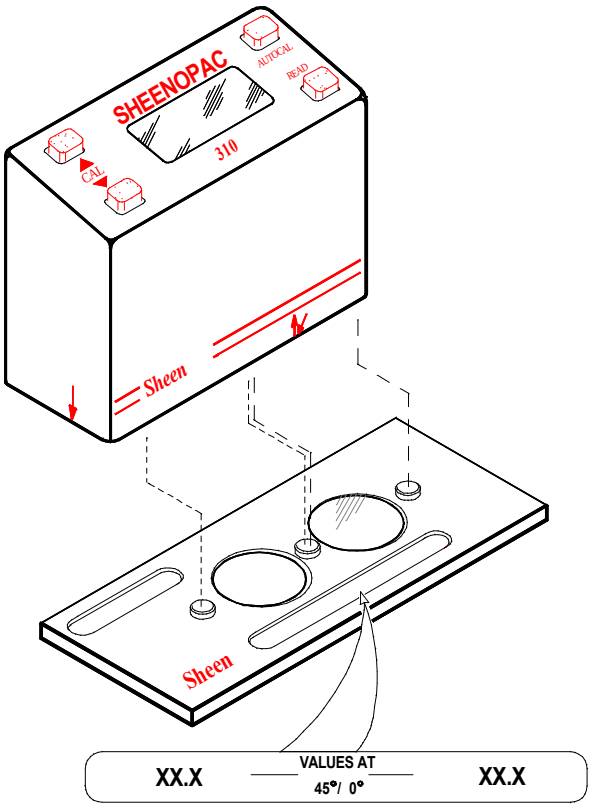
4.2 Procedure (Manual Calibration)

Place the instrument on the supplied calibration tile **(Fig 3)** making sure that the base is flat and located onto the left hand and centre studs. Press the Read button (A1) and hold, then using the Cal buttons (A3, A4) raise the reading (A3) or Lower the reading (A4) to the value stated on the tile label. Release the Read button (A1) and allow the instrument to Auto shut down .

Press the Read button (A1) and verify that the value has been established and held within memory, if not repeat the above function.

Remove the instrument from the calibration tile 'White Standard' and locate on the centre and right hand studs over the 'Grey' Check Standard. Press the Read button (A1) and hold for approximately 3 seconds to allow the instrument to settle, verify that the reading displayed on the instrument is the same as the Gloss Tile value stated on the tile label **(Fig 3).**

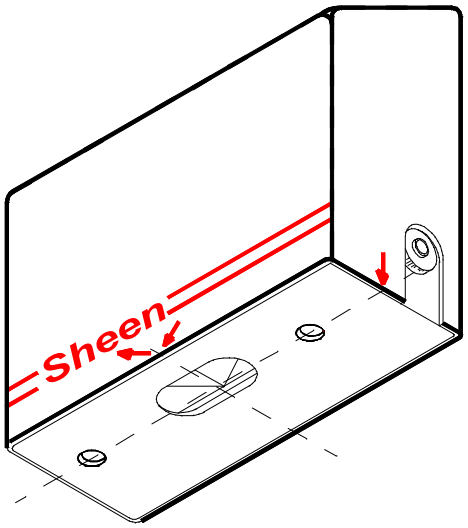
Fig 3.



GLOSS TILE VALUES

Fig 4.

OPTICAL ALIGNMENT



5. MAINTENANCE

5.1 Batteries

The batteries are Ni-Cad rechargeable type and therefore will require to be charged as usage of the instrument dictates. When the batteries require to be charged the legend 'Low Bat' in the upper left hand corner of the LC Display is shown.

It should be noted that the batteries should only be charged from the supplied adapter unit. The 310 may be operated during the period of battery re-charging, full charge of the batteries will take approximately 16 hours. **NO OTHER MAINS POWERED ADAPTER/CHARGER UNIT** should be used to charge the batteries or connected to the instrument to overcome flat batteries as this may result in serious damage to the instrument and will invalidate the guarantee.

5.2 General Maintenance

No routine maintenance is required only to insure that the instrument is kept clean as a general good house keeping policy. No chemicals should be used to either clean the outer case or the LC Display of contamination.

Where in-house facilities exist or when it is not practical to return the instrument on a regular basis for service it may be necessary to inspect and clean the *optics assembly within the instrument housing See fig 5, this may be more evident where the instrument is used in dusty or contaminated conditions.

It is recommended that the optics be cleaned as detailed in the Service Manual 310-OCL, which is available on request.

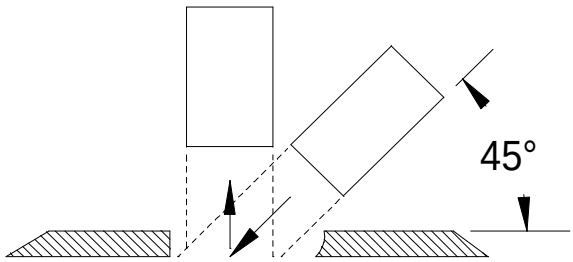
Where electronic or mechanical repairs are required, these should only be carried out by your dealer, and it is advised that regular Calibration is performed on this instrument to insure that satisfactory operation is maintained.

5.3 LAMP CHANGING

Due to the complexity of the optical system and the Autocal circuitry it is recommended that the instrument is returned to your local Authorised Sheen service centre .

Fig 5.

General View - Optic Assembly



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